**Point72 MI Data - Analytics Case Study:**

* You are given two types of data: 311 Service requests, and weather. The 311 Service requests dataset contains all the 311 calls from 2016 to 2018 with many different features including timestamps, location, service request descriptions, etc. Please describe the steps you take to ingest and process the data, what are the challenges and how you overcome them.
* Aggregate the 311 records in ways that best describes the characteristics of the inbound call patterns. Explain and visualize your findings. What are the implications you can infer from the patterns?
* The weather data contains the weather information from the weather stations in NYC from 2010 to 2018 in daily intervals. Describe and visualize your findings. (Please note this is NOT weather forecast)
* The final goal of this project is to predict the daily 311 inbound calls for the next 7 days
  + **Use your insights from previous sections to build a predictive model of your choice – explain the assumptions of your model and why you picked it.**
  + What features are you using in your model and, how does your data exploration process help you decide which features you are incorporating in your model?
  + Evaluate the impact of weather on the call volume, find patterns and define causal impact if there’s any.
  + Build a reasonable model framework, explain your model results, and justify the relationships identified in the model. Not necessary to dig into complex models.

**Please note we suggest you put more effort into in-depth data exploration and descriptive analysis. We’d love to see you think creatively to construct meaningful features, and reason your decision and takeaway in a structured and intuitive fashion.** On the modeling side, we value the capability of following rigorous modeling frameworks and explaining/justifying the result of the models. We suggest not spending too much time making complex models.

Data:

* Weather data attached
* 311 service requests for NYC: <https://point72.box.com/s/tolnuixif144o2g22w04vomfl36wmly1>

You have approximately one week to complete the task (exact due date provided by HR). You will be evaluated on the following:  
  
1.            Ability to work with messy and massive amount of data

2. Ability to conduct data exploration and analyze data from different dimensions

3.            Ability to implement a sensible model  
4.            Ability to justify your data processing and modeling choices  
5.            Ability to visualize and explain the findings and insights

We recognize that there are many approaches to solving this problem and you may try several before arriving at a solution you feel comfortable with. Please document all approaches and be prepared to discuss them during the onsite interview. Following the completion of the task, you will put together a short presentation (aim for 30 minutes with questions) where you will walk the Analytics team members and business stakeholders through your methodologies, findings and thought process. You will also be asked how you would improve your model given more time and how you would ultimately implement your model in a production environment.  
  
Once you feel satisfied with your solution, please send your code (in .py or ipython notebook format), presentation slides (in .pdf format), and any other relevant material to:

* [P72Candidates@Point72.com](mailto:P72Candidates@Point72.com) and DO NOT cc anyone else
* subject line of submission should state: MI Data – Analytics Case Study for NAME
* Please request for the case to be forwarded to Lily Farriss, Michael Byrne, Yuanjing Ma, Richard Zheng, and Yaoguang Jia.
* Please include the following statement, if accurate, within the body of the email submission: *This project does not contain material non-public information and does not breach confidentiality restrictions from a current or previous employer.*

Please note this must be sent from a personal email address; projects cannot be sent from a work address.

***This project is intended to be passive; please do not reach out to any individuals or companies while conducting your work on this project.***